Paradise
Language school

SCIENCE

Prim. 4

First Term

Name: ____________________

Unit (1)

LESSON (1) MEASURING TOOLS

*-Matter : It is any thing that has mass and volume .

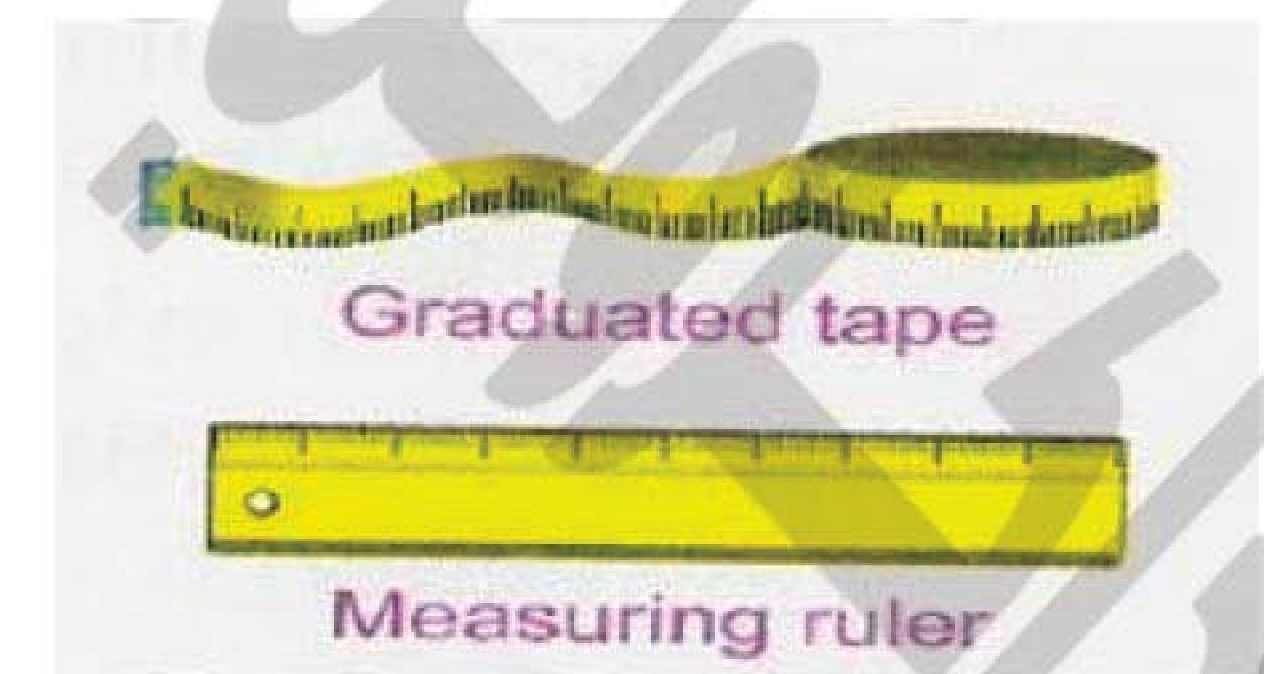
*-Mass : It is the amount of matter in an object .

*-Volume : It is the space that occupied by a matter .

Length

* in the cloth store , the seller asks about the length of the required cloth .

Measuring tools : Graduated tape or measuring ruler .



Measuring units : 1. Centimeter (cm.) for small lengths.

2. Meter(m.) : for large lengths

3. Kilometer (km.) : for very big lengths

* 1 meter = 100 centimete

* 1 kilometer = 1000 meter

Mass

* In the market, the seller asks you about the weight (mass) of vegetables, fruits or meat that you will buy .

*-Measuring tools :

1. Common balance (two-pan balance): for vegetables, fruit or meat.

2. Sensitive balance: for small things such as gold and chemicals in lab .

*-Measuring units:

1. Gram (g.) : for small masses such as jewellery.

2. Kilogram (kg.) : for large masses such as fruits and vegetables .

3. Ton : for very big objects .

* 1 kg. = 1000 g.

* 1 ton = 1000 kg.





Volume

* If you want to buy milk or oil, the seller asks you about the volume.

***-Measuring tools:**

1. Graduated cylinder: - for liquids and irregular solid objects.

2. Ruler: - for regular solid bodies.

***-Measuring units:**

1. Liter, milliliter, or cubic centimeter: for estimating volume of liquids.

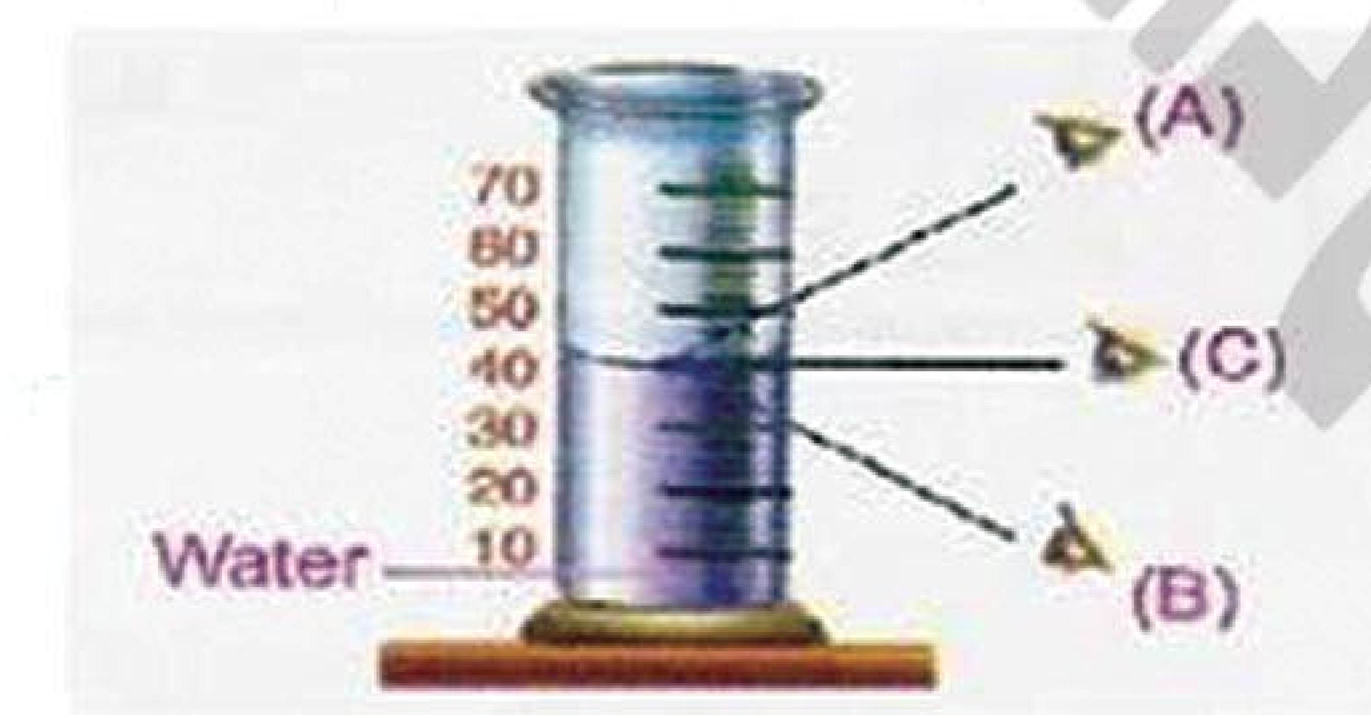
2. Cubic meter (m3.) or cubic centimeter (cm: : for estimating the volume of irregular and regular solid objects.

***-The methods of measuring the volume:**

1. Volume of amount of liquid:

By graduated cylinder.

* The vision must be in a horizontal direction at the lower point of water level.

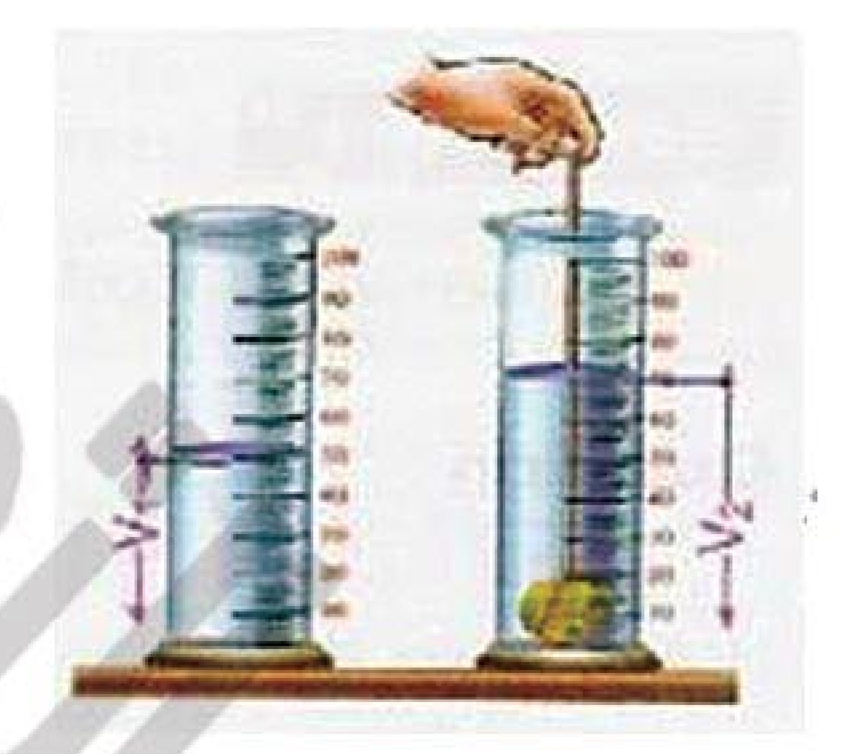




2. Volume of a solid body:

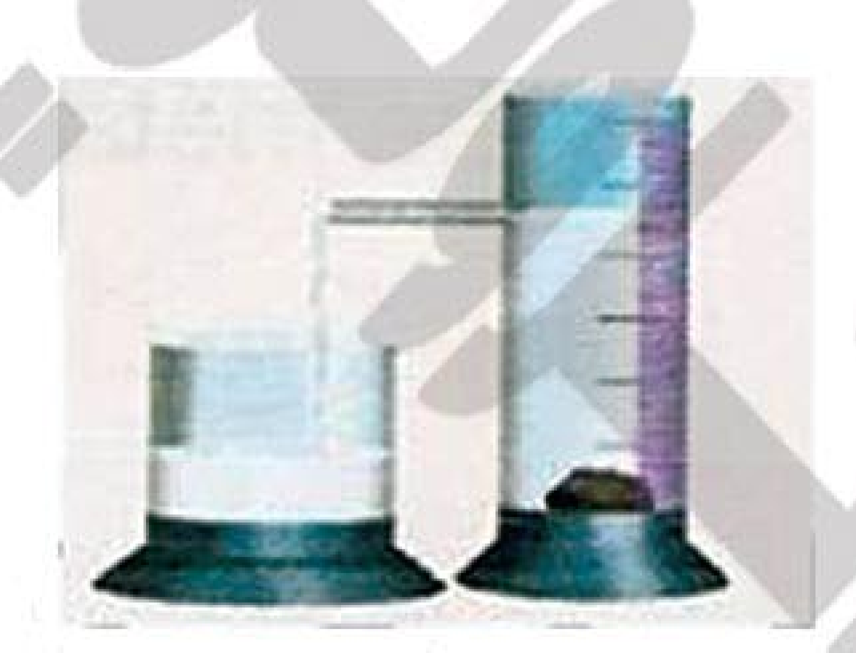
a. Regular solid body : Volume = length x width x height

b. Irregular solid body: Using graduated cylinder .



- The volume of the stone =

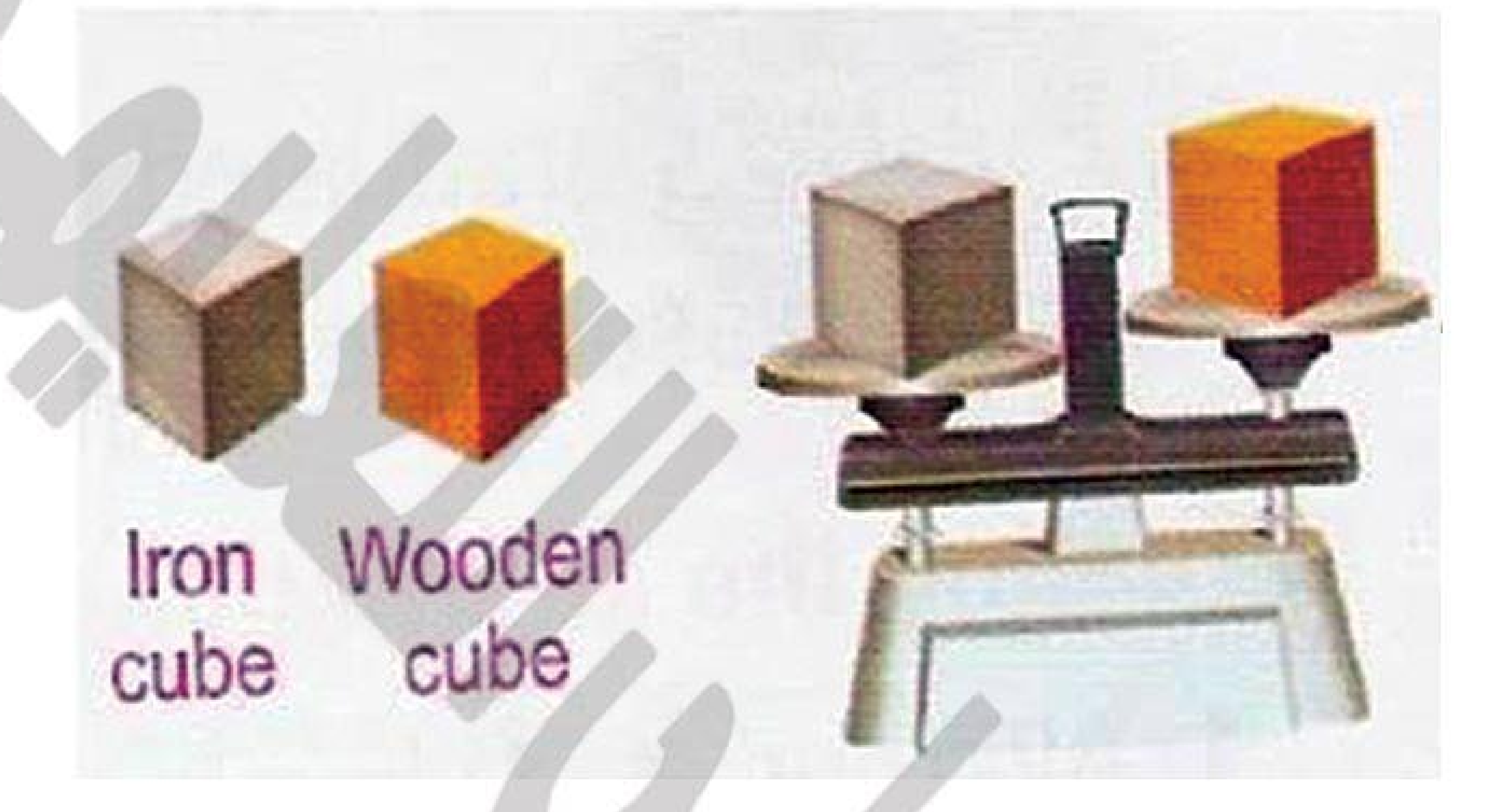
the difference between the two readings = ... Cm3.



- The volume of the stone = the volume of spilled water.

* Equal volume of different substances have different masses

Example : the iron cube has higher mass than the wooden cube of same volume .



*-Lesson (2) Matter states and i changes

- There are three states of matter: solid, liquid and gas.
- Matter consists of small building units called molecules or particles .

*** Solid:**

- Its molecules (particles) are packed very closely together.
- It has a definite shape and volume.

Example: iron, stone, and ice.



*** Liquid:**

- Its molecules (particles) are far from each other.
- It has a definite volume and an indefinite shape.

(take the shape of their container)

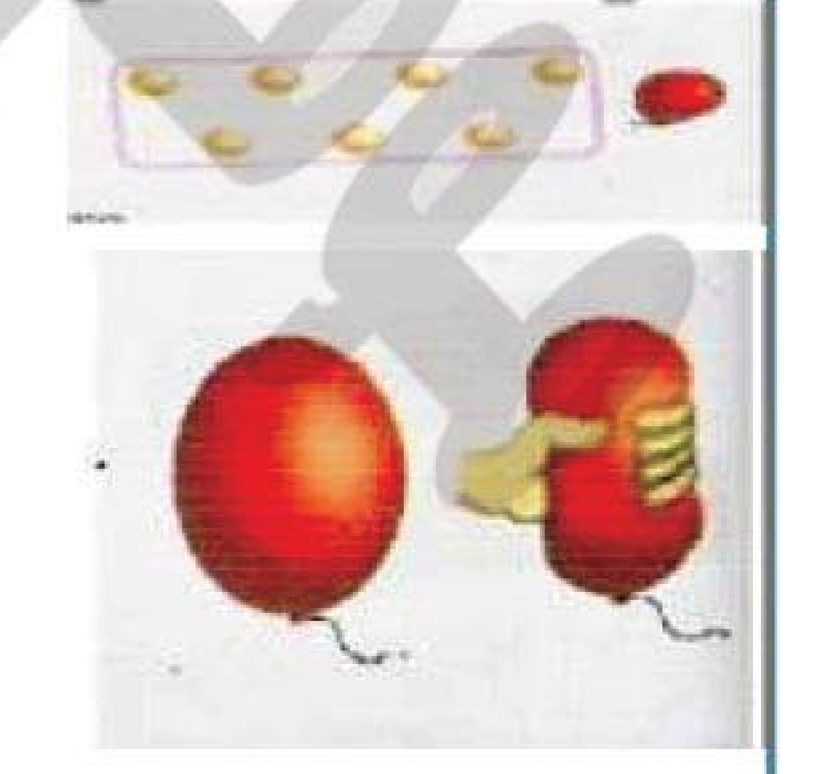
Example; oil, water, milk.

*** Gas:**

- Its molecules (particles) are very far from each other.
- It has indefinite shape and indefinite volume.

(take the shape and the volume of their container)

Example: oxygen, water vapour.





Changes of matter

- Matter exists in only one state at the ordinary room temperature.
- Matter can be changed from one state to another by heating or cooling.

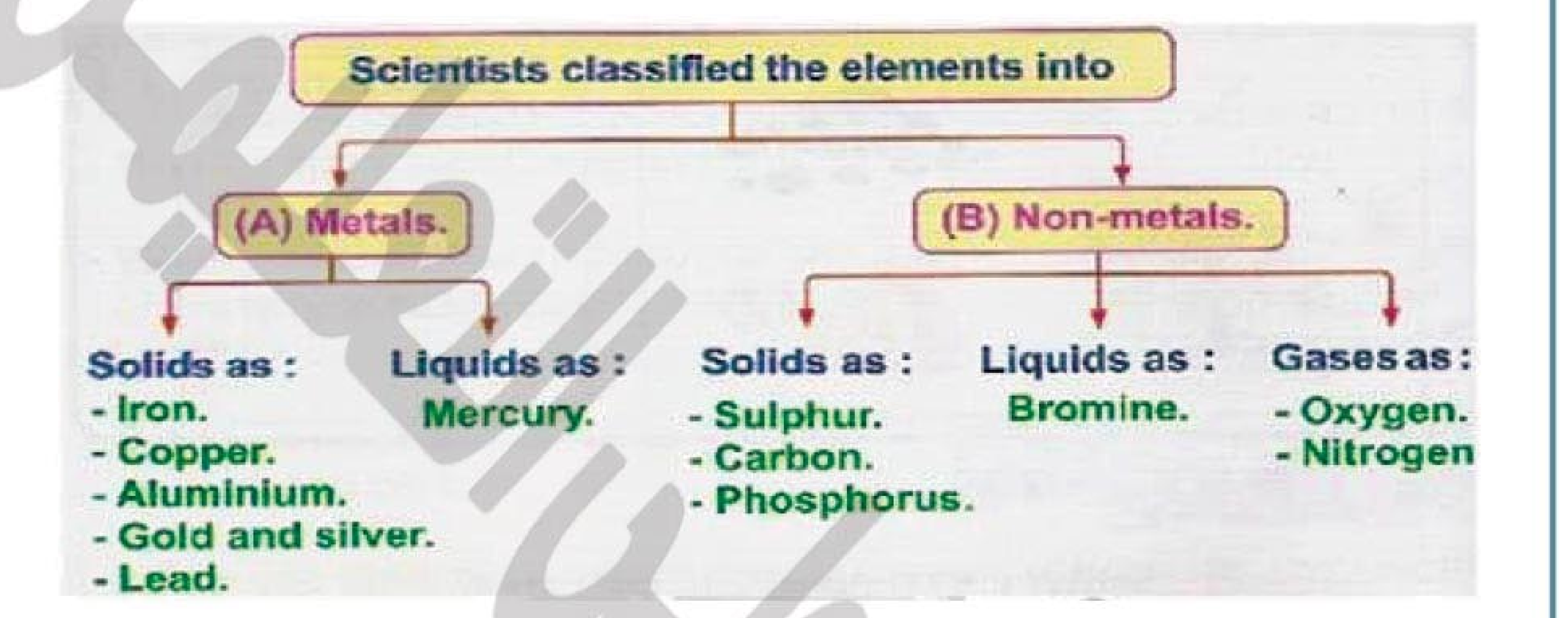


* **Melting**: it is the change in a matter state from solid to liquid by heating.
* **Evaporation**: it is the change in a matter state from liquid to gas by heating.
* **Condensation**: it is the change in a matter state from gas to liquid by cooling.
* **Freezing**: it is the change in matter state from liquid to solid by cooling.

- It is preferred not to fill a bottle of water to the end when its put in the freezer in order not to explode because the volume of ice is bigger than the Volume of water.

*-lesson (3) Elements around us

* Element is the building unit of matter and it is the simplest form of matter that cannot be decomposed into two substances or more.



*-Properties of metals and non-metals

Points of comparison	Metals	Non metals
1 - Luster	They have metallic luster	They don't have metallic luster
2 - Malleability	They are malleable	They are not malleable
3 - Conductivity of heat	Good conductors	Bad conductors
4 - Conductivity of electricity	Good conductors	Bad conductors
5 - Melting and boiling points	High	Low
6 - The state at room temperature	Solids except mercury (liquid)	Solids, liquids , gaseous

*-Note: - Non metals are bad conductors of electricity except carbon which is a good conductor of electricity .

- Metals are solids except mercury which is liquid.



*-The economic importance of some metals and non-metals

Element	Kind	Importance
Iron	Metal	In making bridges , doors and street light .
Aluminum	Metal	In making cooking pans , foil paper and doorknobs .
Gold and silver	Metal	In making jewellery and decoration of furniture .
Cooper	Metal	In making electric wires and metallic coins .
Carbon	Non - metal	In making dry cells .

*-Note:

- Mercury is used in manufacture of thermometers

because it is a liquid metal and a good conductor of heat .

- Bridges and car chassis are made of metals

because metals can be bent and hammered .

- Number of elements = 112 :

- 92 natural elements

- 20 artificial element

Lesson (4) Physical and chemical changes

***-Physical change:** it is a change in the appearance of matter without any change in its structure .

***-Examples:**

1. Change of water from one state to another (ice cycle) .



2. Melting o wax.

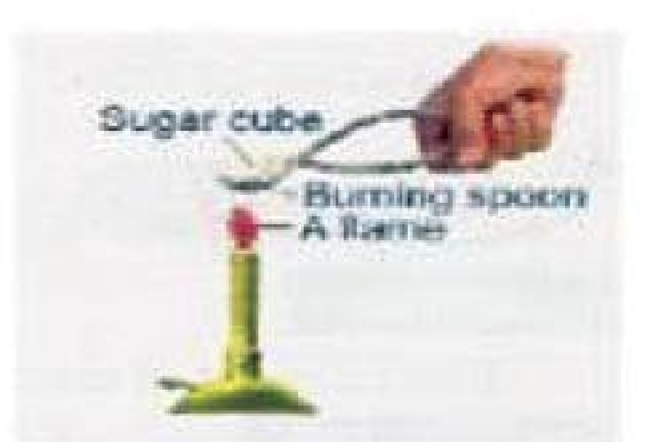


3. Grinding of sugar.
4. Dissolving of table salt or sugar in water.



***-Chemical change** : it is a change in the structure of the substance producing a new substance with different properties .

Examples :



1. Burning of sugar
2. Combustion of paper or any matl
3. Rusting of iro
4. Fermentation of fruil
5. Burning of candle

***-Note:**

- Melting of a candle is a physical change, while burning of a candle is a chemical change .
- Iron rust is a formation of a brittle brown layer due to exposure of iron to a wet air (oxygen + water) .

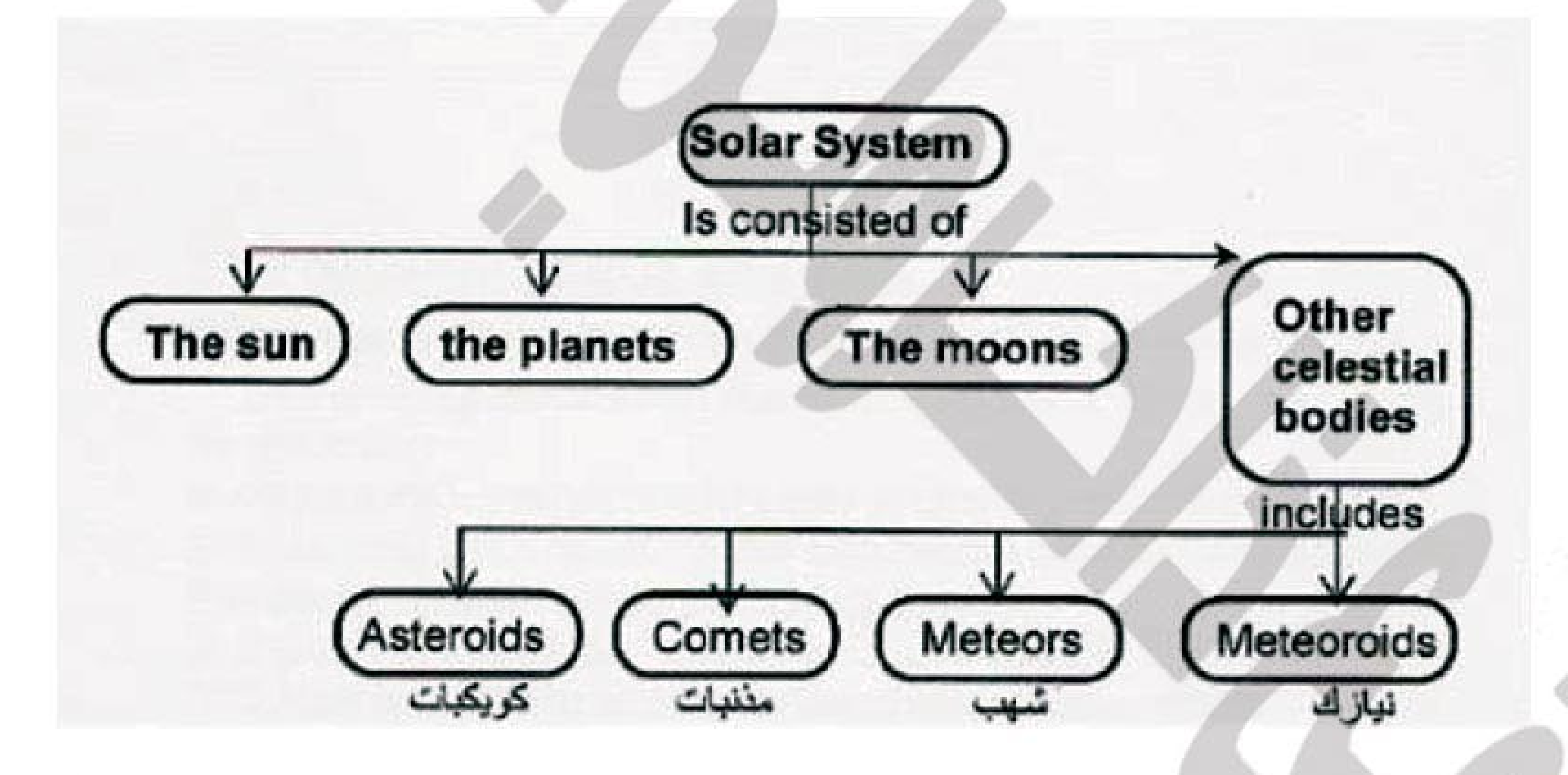
Unit (2)

*-Lesson (1) Stars and planets

***-Stars:**

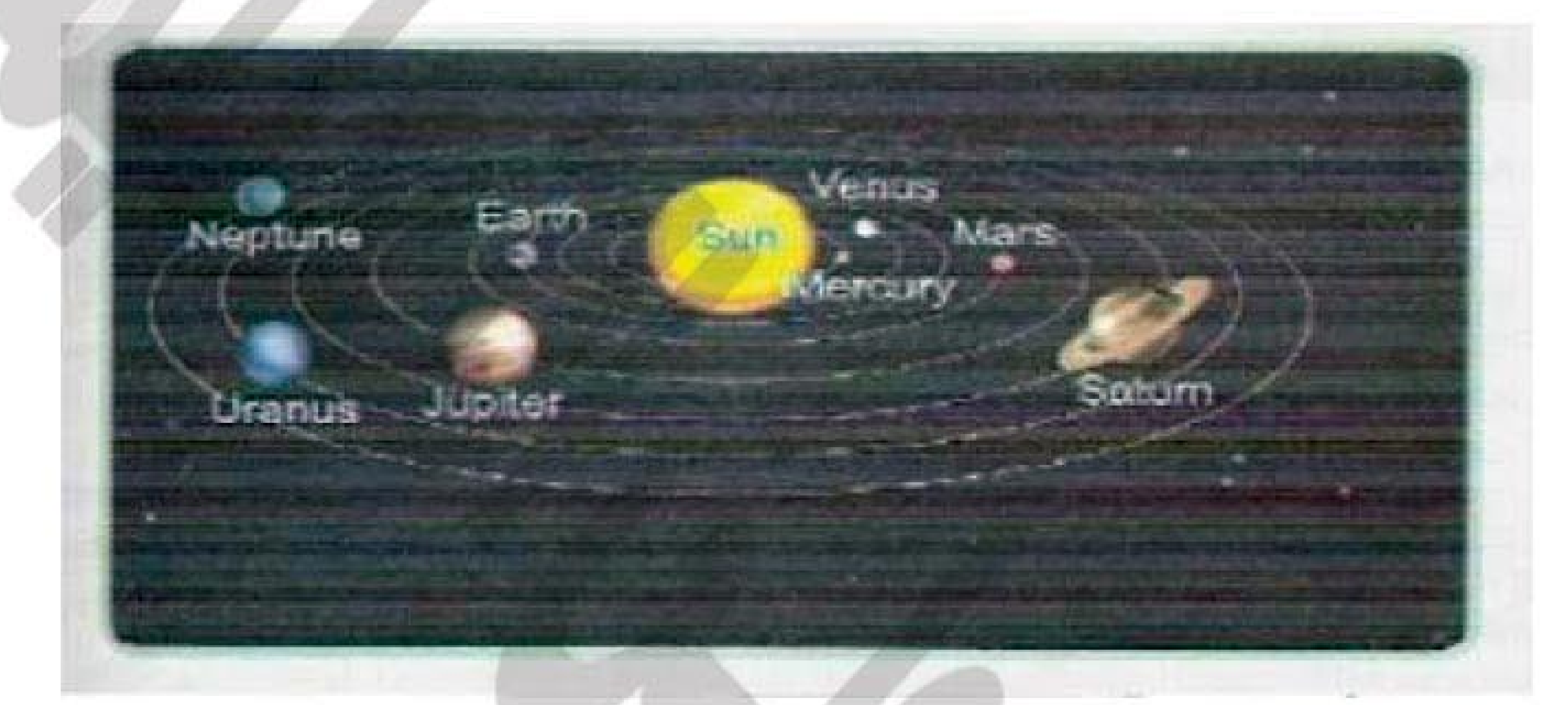
- They are lightning bodies in the space.
- They have different sizes: very big, medium-sized and small stars.
- The big stars looks very small to us because they are very far from us

Note: - The sun is one of the star.



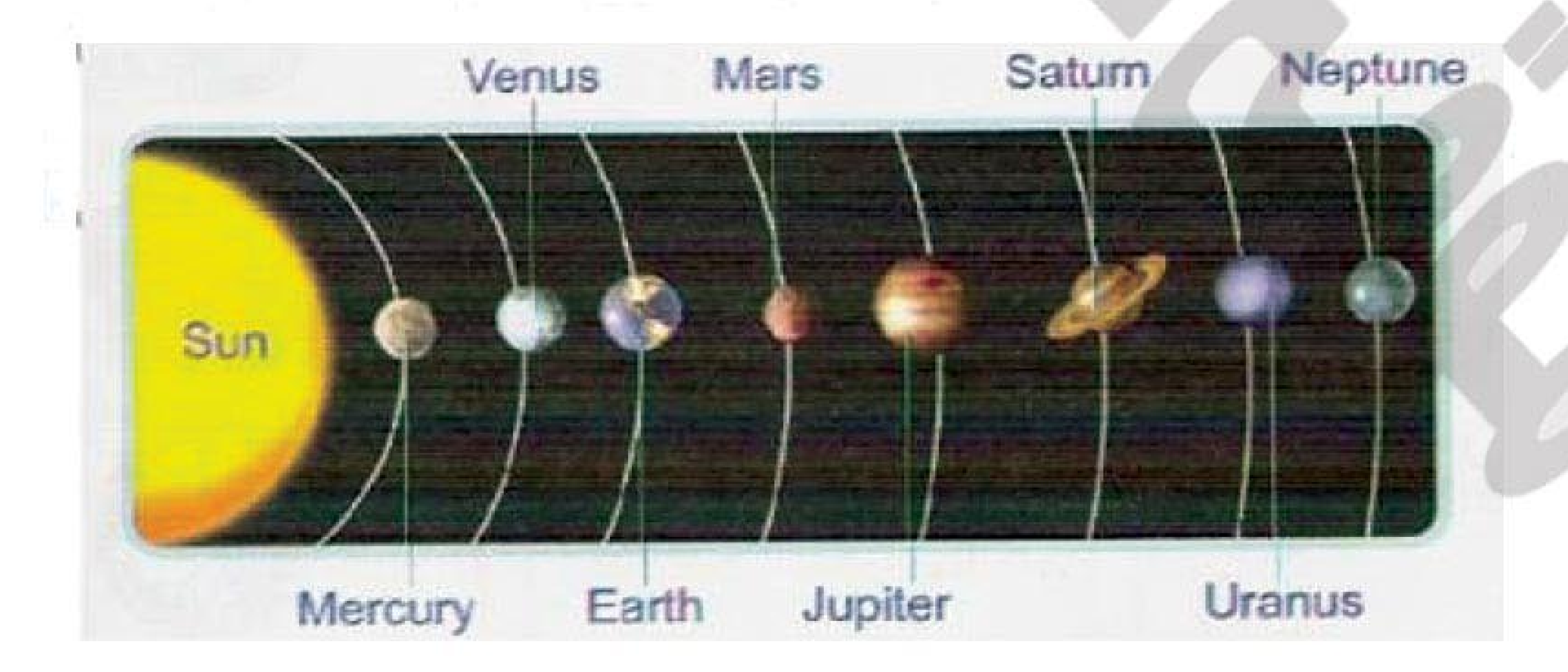
1. The sun

- It is a self shining body that radiates heat and light.
- It is a medium-sized star, but it looks the biggest one because it is the nearest star to us .
- It is the biggest body in the solar system.
- It lies at the center of the solar system.



2. The planets

- They are dark bodies that revolve around the sun in fixed orbits .
- There are eight planets , arranged from the nearest to the farthest from the sun as following : Mercury , Venus , Earth , Mars , Jupiter , Saturn , Uranus , Neptune .





- **Planets are arranged from the biggest to the smallest as follows:**

Jupiter , Saturn , Uranus , Neptune , Earth , Venus , Mars , Mercury .



Planets and their features

The planet	Its feature	Its shape in the space
Mercury	The nearest planet to the Sun.	
Venus	The most beautiful one.	
Earth	The planet where we live.	
Mars	The red planet.	
Jupiter	The biggest planet.	
Saturn	It has coloured rings around it.	
Uranus	The coldest planet.	
Neptune	The blue planet.	

3. The moon

- It is a dark body revolves around the earth, it reflects the sunlight falling on its surface, so it seems shiny .

Comparison between star, planet and Moon :

Star	Planet	Moon
- It is a shiny body. - It emits heat and light. - It rotates in the space. Ex. The Sun.	- It is a dark body. - It doesn't emit (radiate) heat or light. - It rotates in space around the Sun. Ex. The Earth.	- It is a dark body. - It reflects sunlight falling on it. - It rotates in the space around the planet. Ex. The Moon.



*-Lesson (2) The movements of the Sun and the Earth

The movement of the Sun

- The Sun seems to be moving from east to west , but this is not true and this is called the apparent movement of the Sun .
- The apparent movement of the Sun occurs because the Earth rotates around itself (its axis) .
- The apparent movement of the Sun causes the movement of the shadow .



The rotation of the earth

Around itself (its axis)	Around the sun
-It takes 24 hours to complete one round .	- It takes 365 1/4 day to complete one round .
-It causes the sequence of day and night .	- It causes the sequence of seasons

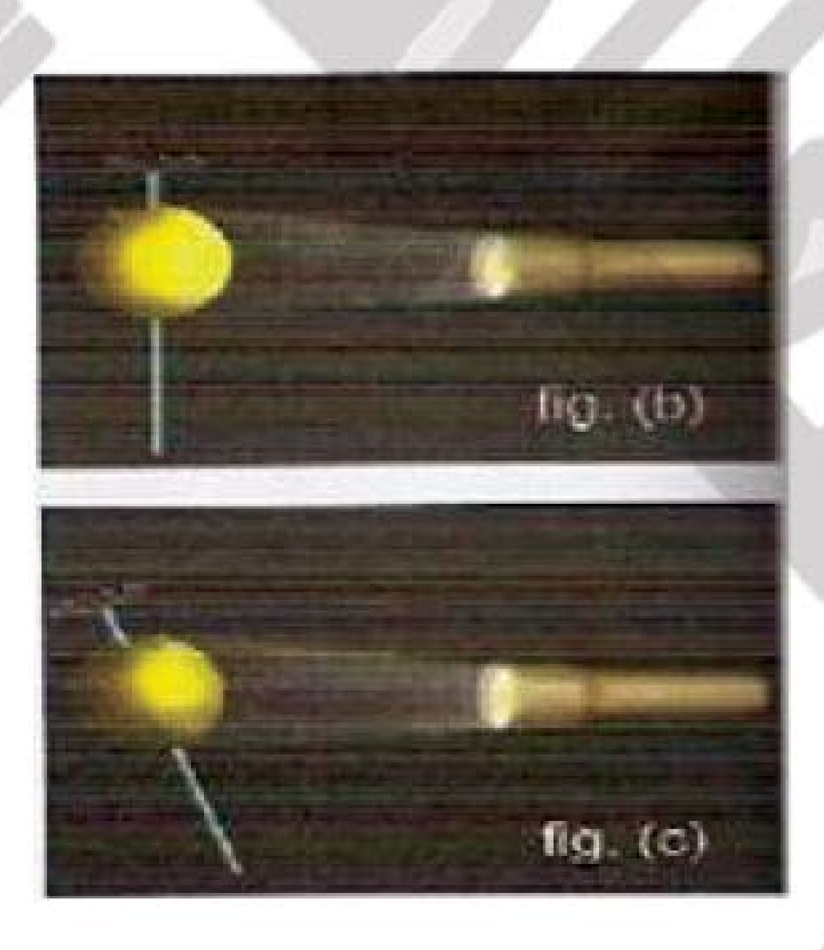
☆Seasons of the year :

1- Summer : 21st June .
2- Fall : 23th September .
3- Winter : 21st December.
4- Spring : 21st March .

- In summer, the day is <u>longer</u> than the night.

- In winter, the day is <u>shorter</u> than the night.

<u>*- Observation:</u> The hours of day are not equal to the hours of night because the axis of the Earth is inclined (not vertical) .



- In spring and autumn (fall) , the number of hours at day is nearly equal the number of hours at night .

<u>Note :</u>

- the determination of the length of day = read of sunset – read of sunrise .
- the determination of the length of night = 24 hours – length of day .

Work sheet

*-Unit 1 Lesson 1

Complete the following statements :

1. Matter is characterized by having................ and................

2. Everything that occupies a space and has mass is called..................

3. .... is the amount of material that the object contains.

4. All matter resembles each other in occupying space and this means that they have......................

5. Oxygen gas occupies a space, so it has a.................

8. Graduated ruler is used to measure ....

9. Measuring tape is used for measuring.......................

10................... is the suitable unit to measure the length of your pencil.

11. Meter is the unit for measuring ....

12. .... is the suitable unit for measuring the length of your room.

13..................... unit is used to measure small lengths, while .... unit is used to measure large lengths.

14. Three meters = ... centimeters.

15. .... unit is used to measure the distance between Cairo and Damietta.

16. To estimate a certain weight of vegetables or cheese, we use...................



17. We use .... to estimate the mass of the chemical materials and things made of gold.

18. .... unit is used to measure small masses, while .... unit is used to measure big masses.

19. .... unit is used to measure the mass of very big objects.

20. The mass of a ring made of gold is measured with .... and its unit is ....

21. Common balance is used to measure ....

22. 1 Kilogram = ... grams.

23. 1 Ton = ... kilograms.

24. The types of balances are .... and ....

25. Graduated cylinder is used to measure.....................

26. The measuring units of volumes are................. , ... and ....

27. The units of measuring the volume of a solid body are .... and ....

28. The liter unit is used to measure the .... of liquids.

29. .... is used to estimate the volume of an irregular piece of rock while .... is used to estimate the mass of very light bodies.

30. Cubic meter is the measuring unit of..........

31. Two liters = ... cm^3

32. The volume of the book can be calculated by multiplying .... x .... x ....

Choose the correct answer:

1. Matter has ....
a. volume only. b. mass only. c. mass and volume. d. mass and length only.

2. The space occupied by matter is known as ....
a. length. b. volume. c. mass. d. shape.

3. Milk has ....
a. mass only. b. volume only. c. length. d. (a) and (b).

Write the scientific term :

1. Anything that occupies a space and has mass.

2. The amount of the material that the object contains.

3. It is the space that is occupied by the object.

4. It is anything that has a volume and mass.

5. Tools used to measure the length of objects.

6. A unit used to measure the small lengths.

7. A unit used to measure the lengths of your classroom.

8. A tool used to measure the mass of gold, silver and chemical substances in laboratories.

9. A tool used to measure the mass of any object.

10. A unit used to measure the large masses as fruits and vegetables.

11. A device used to estimate the volumes of liquids or any irregular solid body.



Give reason for each of the following :

1. The car has a volume.

....

2. A glass is a matter.

....



*-Lesson 2

*-Complete the following statements :

1. States of matter are ...., ... and ....

2. Iron and .... are examples for the solid matter.

3. Water and .... are examples of the liquid matter.

4. Oxygen, ... and .... are considered forms of the gases

5. In the .... matter, the volume and shape do not change

6. A piece of stone has a .... shape and volume because it is .... matter.

7. The .... substances have definite shape and volume.

8. The molecules of the solid matter are...................

9. Liquids have .... volume and do not have definite.

10. Both liquids and gases have no definite...............

11. Ice can be changed into water by ....

12. Melting is the transfer of matter from........... state to .... state by heating.

13. If a liquid evaporates, it becomes.............

14. By heating, water changes into ....

15. .... is the transfer of matter from the liquid state to the gaseous state.

16. Water condenses if it touches a .... surface.

17. Condensation is the change of matter from the .... state to the.......... state.

18. Water vapour changes into.............. by.............

19. Water can be changed into ice by...............

20. If a liquid freezes, it becomes..................



Choose the correct answer:

1. Matter has only .... state(s).

a. one b. two c. three d. four

2. All of these substances have definite shape and volume except

a. iron. b. water. c. wood. d. sugar.

3. The molecules of the .... matter are packed very closely together.

a. solid b. liquid c. gaseous d. no correct answer

4. .... is one of the liquids.

a. Salt b. Wood c. Iron d. Benzene

5. Liquids take the .... of their containers.

a. volumes only b. shape only c. shapes and volumes d. no correct answer

6. All of these matters have definite volume and indefinite shape except..........

a. alcohol, b. oxygen. c. water. d. oil.



*-Write the scientific term:

1. Solid, liquid and gaseous states.

2. A state of matter that has a definite volume and shape.

3. A state of matter that has an indefinite shape and volume.

4. The matter that is characterized by having a definite volume, but it does not have a definite shape

5. The substances that take the shapes and the volumes of their containers.

Give reason for each of the following :

1. Salt is a solid matter.

....

2. Air is a gaseous matter.

....

3. Milk takes the shape of its container, but it has a definite volume.

....

4. Wood has a definite shape and volume.

....

5. Air has an indefinite shape and volume.

....

6. Formation of water drops on the outer surface of a bottle filled with ice.

....



*-Lesson3

Put a sign (√) in front of the correct statements and sign (x) in front of the incorrect :

1. Metals are shiny . ( )
2. Metals are bad conductors of heat and electricity . ( )
3. Metals can be hammered, bent and pulled into the shape of wires ( )
4. Most of the metals have high melting points. ( )
5. Non- metals can be hammered of heat and electricity. ( )
6. Most of non- metals have low melting points. ( )

Write the scientific term for each of the following statements :

Elements which are bad conductors of heat and electricity.

Elements which can not be hammered or shaped into wires.

Elements which are shiny and good conductors of electricity.

Complete the following

1) Elements are classified into two groups : .... and ....

2) Metals are solid at room temperature except ....

3) The liquid metal is .... and the liquid non- metal is ....

4) From gaseous non- metals .... And ....

5) From solid non – metals .... and ....



6) Most metals have .... melting points , while most non-metals have ....melting points.

7) Metals are .... Conductors of heat, while non-metals are .... Conductors.

8) Iron is used in making .... and ....

9) Aluminium is a .... And it is a.............. conductor of heart and electricity.

10) Aluminium is used in the manufacture of .... and ....

11) Gold is used easily in the manufacture of........... and ....

12) Mercury is used in the manufacture of .... because it is a good conductor of heat.

13) The positive poles of dry cells are made of ....

14) Non metals are bad conductor of electricity except ....

Compare between the properties of metals and non- metals

Metals	Non- metals
1. solids except mercury. 2. .... 3. non- brittle . 4. Good conductors of heat and electricity. 5. Have high melting and boiling points.	1. solids ....and ....., liquids .... gases .... 2. Dull 3. .... 4. Bad conductors of heat and electricity . 5. Have .... melting and boiling points.

*-Give reasons for :

1. Electric wires are made of copper.

....

2. Cooking - pots are made of aluminium .

....

3. Handles of cooking pots are made of plastic or wood .

....

4. Gold is metal but carbon is nonmetal.

....

Give one use for each of the following :

1. Gold and silver: ....

2. Aluminium : ....

3. Carbon : ....

4. Iron : ....

5.Copper:..

6. Mercury..

*-lesson 4

*-Complete the following statements:

1. Matter can change from one state to another by.......... or..........

2. There are two kinds of changes that occur to matter which are

..........change and .... change.

3. The dissolving of sugar in water is a .... change.

4. The .... change is a change in the shape and the appearance of matter.

5. Melting of ice is considered a ....change.

6. The physical change is a change in the................. of the substance without

any change in its ....

7. .... and .... are forms of physical changes.

8. Grinding a quantity of sugar is a ....change, while burning of sugar is a

.... change.

9. Ice turns into water by .... and water evaporates forming

.... and these two processes are .... changes.

10. Boiling of water to form water vapour is considered as a ....change.

11. The chemical change is a change in the ....

12. Iron rusting is a .... change, while dissolving of table salt in water is

considered as a .... change.

13. Burning of wood is considered .... change.

14. The freezing of molten wax drops is considered a .... change while the

burning of a piece of paper is a .... change.



15. Iron rusts when it exposed to .... and ....

16. Cutting of bread is a .... change.

17. Fermentation of fruits produces a new .... with new ....

*-Give reason:

1. Burning paper is chemical change

....

2. Cutting paper is physical change.

....



*-Unit2 Lesson 1

*-Complete the following sentences:

1. .... is one of the stars.

2. At night, the stars in the sky look .... because they are .... from the Earth.

3. The Sun radiates .... and..................

4. The space object that emits light and heat is.............

5. The Sun seems the largest star in the sky because it is the ...... star to the Earth.

6. The solar system includes ....,........., moons, meteors and comets.

7............... is the biggest body in the solar system.

8. .... locate at the center of the solar system

9................. are dark bodies that revolve around the Sun and do not emit light of the Sun.

10. There are ....planets that revolve around the Sun in .... orbit

11. The number of planets that revolve around the Sun is...............

12. Planets are arranged according to their distances from the Sun as follows ...., ..., Earth ,............., Jupiter, Saturn , ... and Neptune.

12. The Sun is classified as .... while the Earth is classified as ....

13. .... is the nearest planet to the Sun.

14. The nearest two planets to the Sun are .... and............

15. The nearest two planets to the Earth are .... and..............



16. Venus and Saturn are................ but the Sun is a ....

17. The farthest planet from the Sun is .... but the closest one is.........

18. The biggest planet is................ while .... is the smallest planet.

19. ....is called the blue planet, while ....is called the red planet.

*-Give reasons for:

1. Although the Sun is a medium-sized star, but it looks bigger than the other stars.

....

2. The Sun is a star.

....

3. Jupiter is a planet.

....

*- Put (√) or(x):

1. The third planet away from the Sun is Mars. (   )

2. Neptune is the farthest planet from the Sun. (   )

3. The biggest planet in the solar system is Mercury. (   )

4. Jupiter is the biggest star, while the Sun is the biggest planet. (   )

5. Earth is the planet where we live on it. (   )

6. Saturn has rings around it. (   )

7. The Moon emits light. (   )

8. The satellite or the Moon is a body that moves around the planet.(   )

9. The Moon seems bright as it reflects the sunlight falling on it. (   )



*- Write the scientific term for each of the following:

1. The largest body in the solar system.

2. A celestial body emits heat and light.

3. The Sun and the planets that revolve around it.

4. The planet that has coloured rings.

5. Hot burning body with medium size and radiates heat and light.

6. Moons, meteors, Sun, eight planets, asteroids, comets and meteorites.

7. The central body of the solar system.

8. Dark bodies do not emit light and revolve around the Sun.

9. The star of the solar system.

10. The smallest planet in the solar system.

11. The third closest planet to the Sun.

12. The nearest planet to the Sun.

13. The third planet away from the Sun and the fifth planet in size.



*-Lesson 2

*-Complete the following sentences:

1. The Sun seems to be risen from ....

2. The Sun doesn't rotate around ....

3. The Earth rotates around.................. and..........

4. The Earth rotates around its axis once every...........

5. Sequence of day and night occurs due to...........

6. Axis of the Earth is.................

7. The number of hours at day is not equal to the number of hours at night, because the .... of the Earth is inclined.

8. The Earth takes .... to complete one rotation around itself.

9. The day in the .... season is longer than the day in the ....season.

10. Day and night are nearly equal only during .... and ....seasons.

11. The part of the Earth that faces the Sun is .... while the part of Earth that doesn't face the Sun is ....

12. The Earth rotates around the Sun once every .... and this is called...........

13. The sequence of the four seasons occurs due to ....

14. In the .... season, the day is longer than the night.

15. Summer season occurs in .... when the northern hemisphere is inclined away from the Sun.

16. In the .... season, day is longer than night.

17. In the .... season, day is shorter than night.

18. Earth rotates around Sun once every.............. , while it rotates around its axis once every.....................

Put (√) in front of the right statement and (x) in front of the wrong one, then correct it :

1. The Sun seems to be risen from the west. ( )
2. The Sun does not rotate around the Earth. ( )
3. The Earth rotates around itself only. ( )
4. The movement of shadow of any object exposed to sunlight is due to the apparent movement of the Sun. ( )
5. The Earth rotates around Sun once every 24 hours. ( )
6. The rotation of Earth around the Sun causes the sequence of day and night.( )
7. Hours of day are not equal to those of night as the earth's axis is vertical. ( )
8. Length of night = 28 hours - length of day. ( )
9. The Earth revolves around the Sun in 30 days. ( )



*-Write the scientific term :

1. A phenomenon occurs when the Earth rotates around its axis.(………………….)

2. A season of northern hemisphere when it is faraway from the Sun.(………………………..)

3. A phenomenon occurs when the Earth rotates around Sun.(……………………….)

4. A season in which day is longer than night.(……………………………)

5. Seasons where, the hours of day are nearly equal to those of night.(………………………..)

*-Give reason for each of the following :

1. The apparent rotation of Sun.

…………………………………………………………………………………

2. The number of hours at day is not equal to the number of hours at night.

…………………………………………………………………………………

3. Sequence of day and night.

…………………………………………………………………………………

4. Sequence of the four seasons.

…………………………………………………………………………………

